**Productivity**

The focus in on yield, partitioned by species and tissue type, in kg/ha/season and year. In previous discussions, post-harvest loss was included to examine total productivity on and on-farm. At a minimum, a better standard for measuring productivity is needed, especially for research projects, and may best be examined by partition among crops to have commodity specific measures of yield. Additionally, adoption needs to happen before productivity can occur, as well as for measuring SI.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Field/plot (NPP) | Farm | Household | Community & National\* |
| NPP (partitioned by species and tissue type) | Yield / input  kg / ha / season  kg /ha / year |  |  |  |
| Land productivity (partitioned by species and tissue type) -- | NPP.  kg / ha / season  kg / ha / year \*\* | Value / farm / year (aggregated in dollars, or local currency, to allow for substitution of crops) | Value / person / year | % farmers adopting SI practices |
| Yield variability (over time and space) | Representative sample (for calculating coefficient of variability, distribution, etc.) | Representative sample (for calculating coefficient of variability, distribution, etc.) | Representative sample (for calculating coefficient of variability, distribution, etc.) | % farmers adopting SI practices |

\*\* Derive protein and calories from these other forms of value, and comparing across different species.

**Economic**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Field/plot | Farm | Household | Community & National\* |
| Factor Productivity (Efficiency) | Returns to land/labor/or animals: Currency/”unit”  **√** | Returns: currency/farm | Returns: currency/HH | (Resilience approach)  ∑Hholds -> relative difference across farms/hholds |
| P(<critical threshold)  (risk, equity) | Yield Risk, Livestock mortality: Probability histogram | Prob  Gross Revenues <threshold: P | Prob  Gross Revenues <threshold: P | Prevalence within community of Hh < critical level  **√** |
| Distribution of benefit by wealth (equity) |  |  |  | Distribution of incremental benefits by farm/size: Histogram  **√** |
| Poverty Reduction (equity) |  |  |  | Ag or rural wage/staple food price: index  **√**  Hh expenditure |

The focus is on productivity, risks, and equities rather than gross margin, gross margin variability, and total factor productivity.

**Note: FtF Indictors are marked with a √ in the upper right hand corner.**

**Environment**

Each indicator is dependent on scale and time, and need to remain simple despite the potential losses in nuance in remaining simple. The indicators can be specified per context. Generally, the percent cover and percent tree cover are inclusive of each level despite needing slightly different metrics between farm and field. They are inclusive of both perennials and non-perennials. As scales increase, species diversity is of greater concern.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Field/plot | Farm | Household | Community & National\* |
| Vegetative Cover | %land cover and %tree cover per year | %land cover and %tree cover per year | N/A | %land cover and %tree cover per year (landscape in this context) |
| Plant Biodiversity | #species  Shannon Diversity  And %cover of noxious plants | #species  Shannon Diversity And %cover of noxious plants | N/A | #species: rare conservation, native species |
| Water availability | Crop per drop |  |  | % unmet demand (litres per capita) |
| GHG Emissions | CO2 equivalents per dollar. | CO2 equivalents per ton. | N/A | CO2 equivalents per hectare. |
| Nutrient Balance | Kg NPK per hectare per year | Kg NPK per hectare per year | N/A | Kg NPK per hectare per year |

**Social**

The focus depends on the definitions of each indicators despite that the social indicators look at the impact of SI is *for* gender equality. For example, the goal is to evaluate if SI improves women’s access and use of resources in ways that improve their household and community decision-making power. However, evaluating such a relationship still require definitions of terms such as equity. It may be important to finalize the social theory of change for SI to finalize indicators.

\* Disaggregated by gender, age, ethnic background at HH level and Community/National

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Field/plot | Farm | Household\* | Community & National\* |
| Equity | Access production factors | Perceived Labor expended | \*Control of products (income) | What is the variability and distributions disaggregated by gender and age |
| Level of collective action |  |  |  | # of collective groups e.g Village eco regulations/  Conflict resolution measures |
| Knowledge exchange & extensions |  |  | Where do you get this info? From Hrs training / person? |  |

**Human Indicators**

For the human domain, population level data is possible across households and communities, through census style survey. Farm-level data collection is possible if using the same collection tools towards the same measures and indicators. Basic assumptions: Availability of diverse foods 🡪 Equitable Access (at markets)🡪 Uptake of nutrients (level of disease and health e.g. suffering from worms or aflatoxins then can’t take in nutrients).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Field/plot | Farm | Household\* | Community & National\* |
| Nutrition | Diversity of crops grown(disaggregated by consumption versus sale)  G protein / ha | Availability of diverse food crops  KG protein / farm | Access  Dietary diversity/ rate of stunting and wasting.  KG Consumed protein / person (diss by gender and age)  Uptake of essential nutrients | Dietary Diversity/ rate of stunting and wasting.  KG Consumed protein / person (diss by gender and age)  Market supply of diverse food |
| Food security | Calories/ ha | Kilo calories/farm | Income  Duration of food reserves  Post-harvest losses | Food production  Food reserves  Infrastructure (e.g. warehousing, access to markets/roads, irrigation; dependent on geography)  Enabling trade policies |
| Labor productivity | $/ hour  Working conditions (safety) | $/ hour  Working Conditions (safety) | Average $800/day  Measure of well-being/happiness  Amount of remittances | % of population engaged in labor  Amount of remittances  % of workforce migrating intra-nationally and internationally |

\* Disaggregated by gender, age, ethnic background at HH level and Community/National